posterior part of the duct that Günther speaks of an annular lining. The function of the folds, which, in all probability, is to pass along the sperms, and possibly at the same time to unite them into bundles, could scarcely be effective, however, if the folds were annular. The lumen of the left vas deferens, which Günther found to be better developed than the right in one specimen, is very irregular in diameter in my specimen. At its widest the duct is about 5 mm., but where narrowest it only allows the passage of a bristle.

One of the males examined has two abdominal pores (text-fig. 139 A, A.P., R.A.P.), of which the right is the better developed. This condition differs from that described by Günther (2. p. 4), in which the left pore only was present.

A Vestigial Seventh Branchial Arch.

Three specimens were dissected to determine if there were any trace of a seventh arch. Traces were found in two of the specimens, one of which was not quite full-grown.

The remnants in the smaller specimen consist of four small pieces of cartilage on one side and two on the other. These lie close to the cerato-branchial of the sixth arch, on the posterior side, nearer its median extremity. In the adult specimen in a similar position there are two pieces, the larger of which equalled in length the combined four pieces found in the smaller specimen.

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2. Second Report on the Batrachians and Reptiles collected in South Africa by Mr. C. H. B. Grant, and presented to the British Museum by Mr. C. D. Rudd. By G. A. Boulenger, F.R.S., V.P.Z.S.

[Received May 3, 1907.]

(Plates XXI. & XXII.* and Text-figures 140, 141.)

Since the publication in these 'Proceedings,' two years ago (P. Z. S. 1905, ii. p. 248), of an annotated list of the Batrachians and Reptiles collected by him, Mr. Grant has continued his exertions in the same department, making collections in the following localities :—

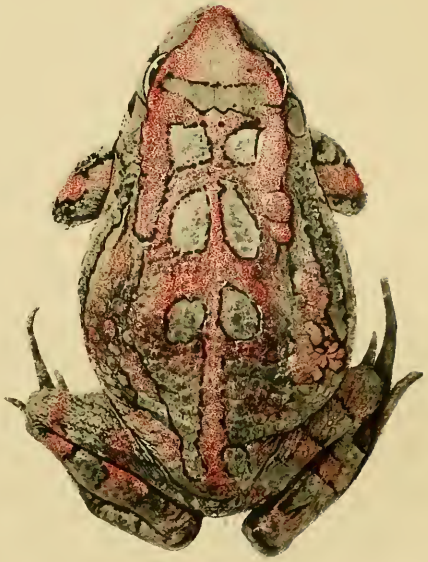
I. Cape Colony. Knysna, 50 miles east of Mossel Bay.
II. Natal. Illovo, 30 miles S.W. of Durban.

* For explanation of the Plates, see p. 487.

1.

4

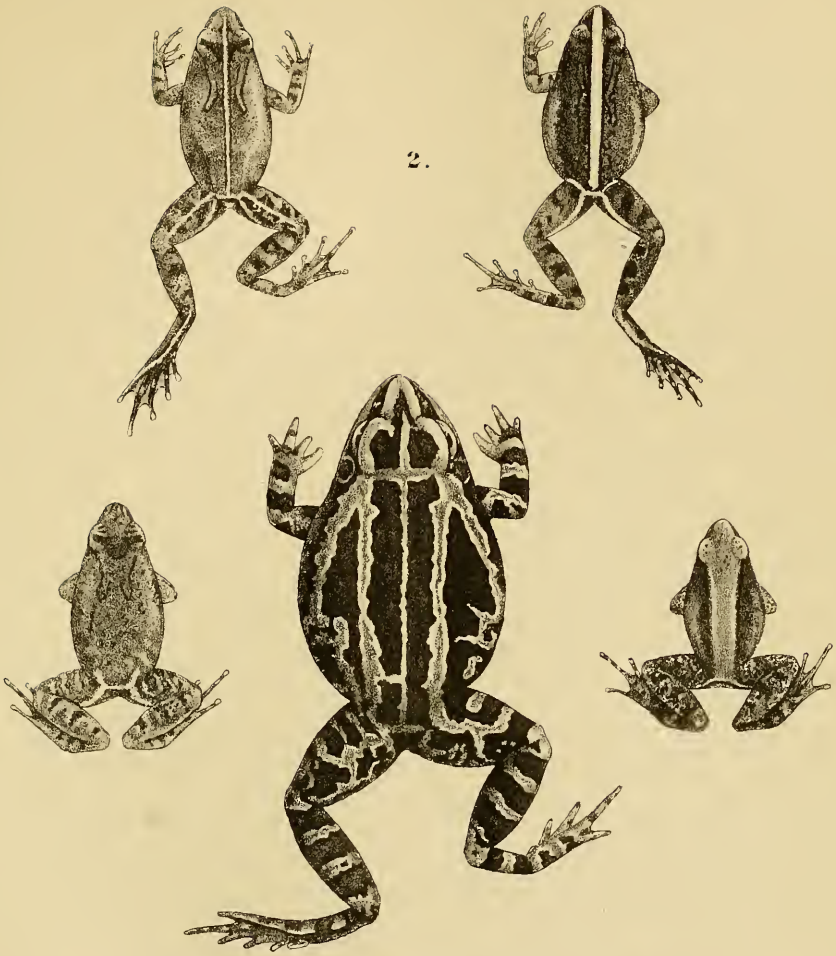
2.



3.

BUFO REGULARIS.

J. Green, Chromo.



2.

1.

1a.

1b.

J. Green del. et lith.

1. RANA RUDDI. 2. PHRYNOBATRACHUS NATALENSIS.

III. Transvaal. Legogot, Barberton District, on Drakensberg Mts., on the Komati R., 2500 feet.
Pietersburg, N. slope of Drakensberg, 2400 feet.
Tuefloop, N. slope of Drakensberg, 18 miles E. of Pietersburg, 4500 feet.
Woodbush, N. slope of Drakensberg, 30 miles N.E. of Pietersburg, 4500 feet.
Zoutspansburg, on Klein Letaba, a branch of Letaba R., affluent of Olifants R., 1000 feet.

IV. Portuguese East Africa. Inhambane.
Coguno, about 80 miles inland of Inhambane.
Beira.

The series of specimens now dealt with proves more interesting than the first, and two species are described as new. In the following list, an asterisk precedes the name of the species not mentioned in the first report *; two asterisks indicate that the species has not been previously recorded from south of the Zambesi.

BATRACHIA.

Aglossa.

1. Xenopus lævis Daud.

Knysna.

Phaneroglossa.

2. Bufo regularis Reuss. (Plate XXI.)

Woodbush, Klein Letaba, Coguno, Beira.

As in almost every part of Africa, this species varies wonderfully in colour and markings, even in specimens obtained from the same pools, where they congregate for breeding. Some have much crimson or pink on the back of the thighs and in the groin, whilst others are entirely deprived of the brilliant colour. The most remarkable specimens are from Woodbush, and might be well thought to indicate a distinct species, were they not connected with the more typical form by every possible gradation. The young have the upper surface of the snout as far back as a dark interocular bar, and the parotoid glands, of a beautiful pink; part of the back is also pink, with grey markings with a fine black border; the pink ground-colour appears as a dagger-shaped mark ing on the back. These markings become more indistinct with age, and the pink colour gradually fades away or disappears entirely. By a curious inversion of the ground-colour and the markings, some out of a number of specimens from Zoutspansburg are grey with pink markings. Four of these remarkable specimens are figured on Pl. XXI.†

In some of the specimens from Beira, the parotoid glands are exceptionally so flat as to be hardly distinguishable.

* P. Z. S. 1905, vol. ii. p. 248.

† See the two bottom figures on colour-plate vi. of Miss Dickerson's 'Frog Book' for a similar inversion of colour in *Hyla versicolor*.

*3. Bufo carens A. Smith.

Legogot, Woodbush, Coguno.

Specimens from Port Elizabeth, which I have kept alive, were of an olive colour, with the lateral fold, the larger warts, and the loreal region brick-red; iris golden, much obscured by black vermiculations.

**4. Bufo taitanus Peters.

Beira.

This little Toad, remarkable for the absence of the tympanum and the eustachian tubes, was only known from Somaliland, Taita, and the east coast of Lake Tanganyika.

*5. Phrynomantis bifasciata A. Smith.

Beira.

*6. Breviceps verrucosus Rapp.

Knysna.

*7. Breviceps mossambicus Peters.

Zoutspansburg.

*8. Hemisus marmoratum Peters.

Beira.

**9. Rana ruddi, sp. n. (Plate XXII. fig. 1.)

Vomerine teeth in two small groups close to the inner borders of the choanæ. Head feebly depressed, as long as broad; snout rounded, feebly projecting beyond the mouth, a little shorter than the orbit; canthus rostralis obtuse; loreal region concave; nostril equally distant from the eye and from the end of the snout; interorbital region narrower than the upper eyelid; tympanum very distinct, a little smaller than the eye. Fingers very short, obtusely pointed, first extending as far as second; toes short, obtuse, one-third webbed; subarticular tubercles of fingers and toes feeble; a large, compressed, very prominent, shovel-shaped inner metatarsal tubercle, at least as long as the inner toe. The tarso-metatarsal articulation reaches the eye. Skin of upper parts with flat smooth warts of unequal size; a very indistinct dorso-lateral fold; lower parts smooth, sides of belly feebly areolate. Dark brown above, with light, yellowish streaks on the head and body, viz., a narrow vertebral line, a broader band from the end of the snout along the canthus rostralis and the outer border of the upper eyelid to above the tympanum, where it bifurcates, the upper branch extending to above the vent, the lower running obliquely to the groin; usually a yellowish bar across the occiput; a yellowish streak along the upper lip; a white oblique line in front of the eye and a white circle round the tympanum; limbs with dark and pale bars; hinder side of thighs yellowish, marbled with black; throat and breast dark brown, or

marbled with dark brown, with a Y-shaped white marking on each side; belly white. Male with two external vocal sacs, opening by a slit on each side of the throat.

From snout to vent 48 millim.

Two males and one female, found breeding in a rain-pool at Beira in February.

This species is very closely related to *R. ornata* Peters, from E. Africa, and *R. ornatissima* Bocage, from Angola. It differs from the former in the shorter web between the toes, from the latter in the much smaller size, in the shorter and less pointed snout, and in the shorter hind limbs. The white markings in front of the eye and under the throat are very similar in the three species. Another very close ally of *R. ruddi* is *R. moeruensis* Blgr., from Lake Mweru, which differs in the longer first finger, the longer hind limbs, the very prominent dorso-lateral glandular fold, and the coloration.

10. Rana angolensis Bocage.

Tuefloop.

*11. Rana oxyrhynchus A. Smith.

Zoutspansburg, Coguno, Beira.

12. Rana mascareniensis D. & B.

Beira.

13. Rana grayi A. Smith.

Knysna.

**14. Rana galamensis D. & B.

Beira.

A widely distributed species, known from the Soudan (from west to east), West Africa from the Senegal to the Congo, and Central and East Africa (*R. bravana* Peters †, *R. oubangiensis* Mocquard).

R. galamensis is closely related to the Indian *R. malabarica* D. & B., and surprisingly resembles the Central-American *R. godmani* Gthr. The male has an external vocal sac on each side of the throat and a large flat gland on the front side of the arm (humerus), as in the Burmese *R. granulosa* And., *R. humeralis* Blgr., and *R. oatesi* Blgr.

I avail myself of this opportunity to point out that the Frog named by me *R. elegans*, which had been previously confounded with the West-African *R. albilabris* Hallow., is identical with *R. guentheri* Blgr., and must therefore be erased from the list of African species.

† Specimens of *R. nutti* Blgr. have been erroneously referred to *R. bravana* by Tornier.

15. Phrynobatrachus natalensis A. Smith.

Coguno, Beira.

This widely distributed Frog varies remarkably in its markings. as do the other species of the same genus. A few specimens from Beira are represented on Pl. XXII., figs. 2–5, to illustrate this feature.

** 16. Arthroleptis whytii Blgr.

Beira.

Previously known from British Central Africa.

*17. Rappia marmorata Rapp.

Beira.

*18. Rappia cinctiventris Cope.

Beira.

*19. Cassina senegalensis D. & B.

Illovo.

The single small specimen, a male, has the elongate oval gular disk of *C. senegalensis* and the distinct web at the base of the toes of *C. wealii*. I now feel very doubtful as to the specific validity of *C. wealii*.

REPTILIA.

Chelonia.

1. Homopus areolatus Thunb.

Knysna.

2. Cinixys belliana Gray.

Beira. Several shells of adults and one young in spirit.

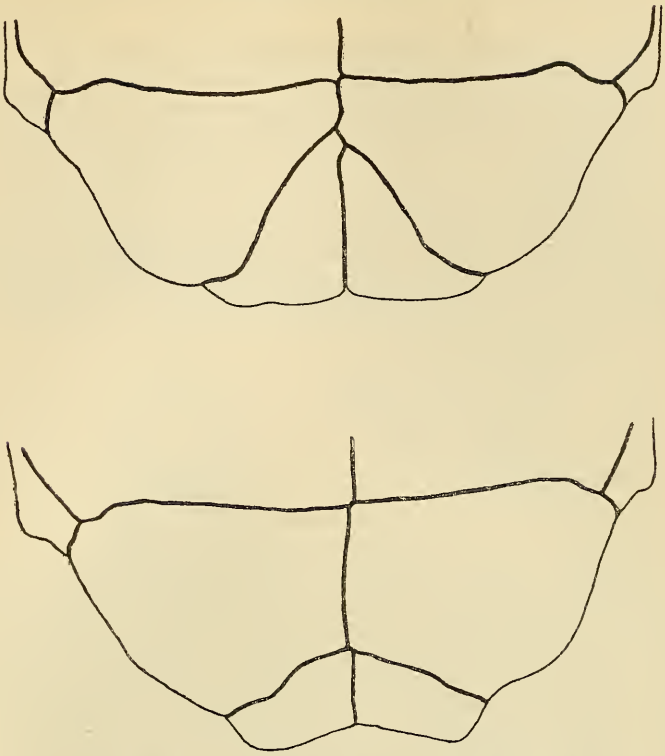
I have previously† taken exception to Dr. Siebenrock's separation‡ of *C. nogueyi* Lataste, as a distinct species, and my view is further confirmed by the series of specimens from Beira. The adults (shells only) have the black radiating streaks on the carapace, and the extent of the suture between the anal shields varies considerably, as may be seen from the annexed figure (text-fig. 140) representing the hind lobe of the plastron in two adult females, showing two extreme types in the series sent by Mr. Grant. Although the fore limb has five claws in the specimens from Mashonaland § and Zululand examined by me, the young from Beira has only four, and would therefore be referable to *C. nogueyi*.

**3. Sternothærus nigricans Donnd.

Beira. Two shells, measuring 110 and 77 millim. respectively.

† Ann. Mus. Genova, xlii. 1906, p. 197.
‡ Sitzb. Ak. Wien, cxii. 1903, p. 442.
§ I now regard *Homopus darlingi* Blgr. as based on a young of this species.

Text-fig. 140.



Hind lobe of plastron in two adult female *Cinixys belliana*.

Suture between the humeral shields shorter than the intergular. These shells agree with my definition of *S. nigricans*† and also with the description and figure of Madagascar specimens given by Siebenrock‡. The same form was obtained in N.W. Rhodesia by Mr. Neave, and is therefore not peculiar to Madagascar, as believed by Siebenrock.

*4. Pelomedusa galeata Schœpff.

Tuefloop.

Lacertilia.

*5. Hemidactylus mabouia Mor.

Zoutspansburg, Coguno, Beira.

† Cat. Chelon. p. 195 (1889).
‡ Schildkröten, in Vœltzkow, Reise Ostafr. ii. p. 36, pl. v. fig. 19 (1906).